

(d) REMARKS

The claims are 9 and 14-16 with claim 9 the sole independent claim.

Support for new claim 15 is found, inter alia, in paragraph [0028] line 19. Reconsideration of the claims is expressly requested.

Former claims 1-8 and 12-13, withdrawn from consideration as a result of a restriction requirement, have been cancelled without prejudice or disclaimer.

As requested, a replacement sheet for Fig. 2 is enclosed in which a "PRIOR ART" legend has been added.

The Examiner had rejected claims 9-11 as obvious over Inaba '403 in view of Garvey '336. The Examiner admits, with regard to claim 9, that Inaba fails to teach a pressure control means for keeping the pressure in the first chamber greater than the pressure in the second chamber. The Examiner cites Garvey for a pressure control means for keeping the pressure in the first chamber greater than the pressure in the second chamber. The grounds of rejection are respectfully traversed.

Prior to addressing the grounds of rejection, Applicants wish to briefly review certain key features and advantages of the present claimed invention.

The present invention relates to an apparatus adapted to blow carbon fibers transported within a transporting tube connecting a generation chamber and a film-forming chamber by having a difference of pressure between the generation chamber and the film-forming chamber and depositing the carbon fiber on a substrate. According to the present invention, having a pressure difference between the generation chamber and the film-forming chamber causes both gas introduced into the generation chamber and the generated carbon fiber, to flow. The flow resulting from the pressure gradient orients the

carbon fiber in the lengthwise direction parallel to the direction in which the carbon fiber is transported. Since the carbon fiber is oriented lengthwise in the direction of flow, the fiber is transported readily. Blowing carbon fibers whose lengthwise direction is oriented in the direction of transportation towards the substrate enables the ends of the carbon fibers to impact the substrate to provide for better contact. Further, the carbon fiber can be deposited on the substrate so that the lengthwise direction of the carbon fiber will be approximately perpendicular to the substrate. By using such a deposited carbon fiber in an electron emission member for a field emission-type display one enables high field intensity to be applied to the end of the carbon fiber and high current density to be obtained.

As disclosed in column 9, line 25 to column 10, line 11, Inaba '403 teaches a plasma processing apparatus having a duct as well as a cathode connected to a target having a carbon source and a striker. A processing chamber is present which includes the processed substrate and a filter between the duct and the processing chamber. However, Inaba '403 does not clearly show depositing a carbon fiber on a substrate. Also, Inaba recites in column 4, lines 3-7: "Furthermore, the vacuum pressure (back pressure) of the first magnetic field duct 14, the second magnetic field duct 15, and the processing chamber 6 at the time when starting the arc discharge 5 is set equal to, for example, at most approximately 5×10^{-5} Pa by using the exhaust pump 21."

Accordingly, Inaba does not disclose providing a pressure difference between the duct and the processing chamber. Therefore, Inaba does not suggest or teach an advantage of the present invention of providing a pressure difference between the duct and the processing chamber and orienting the lengthwise direction of the carbon fiber along the direction of transportation in the transporting tube so as to blow the carbon fiber

directly onto the substrate and provide enhanced contact between the carbon fiber and the substrate. The defects of Inaba are not met by Garvey '336.

As described in column 9, line 25 to column 10, line 11, Garvey '336 discloses an apparatus comprising a low vacuum chamber including an anode and a cathode opposed to the anode and a high vacuum chamber including a substrate for forming a thin film by controlling the pressure in the low vacuum chamber to be greater than that in the high vacuum chamber. Garvey also discloses that the low vacuum chamber and the high vacuum chamber are connected through an opening. A "high vacuum" chamber has a lower pressure than a "low vacuum" chamber.

Garvey does not disclose a transporting tube for transporting a carbon fiber for connecting the low vacuum chamber and the high vacuum chamber. Therefore, it does not suggest or teach the advantage of the present invention of providing a pressure difference between the tube and the processing chamber and orienting the lengthwise direction of the carbon fiber along the direction of transportation while transporting the carbon fiber in the transporting tube so as to blow the carbon fiber onto the substrate and improve contact between the carbon fiber and the substrate.

Inaba does not disclose the problem of how to orient a carbon fiber in a duct, nor the solution of providing a pressure difference between the duct and the processing chamber. Garvey, likewise, fails to teach orienting a carbon fiber in a duct nor does it teach a transporting tube with a pressure differential. Having failed to teach the problem of carbon fiber transportation in a tube, it cannot suggest its solution.

Claim 14 relates to providing a nozzle at the end of the transporting tube. This generates a higher speed therein for propelling the carbon fiber compared with a tube

with no nozzle. As a result, the contact between the carbon fiber and the substrate improves.

In claim 15, the nozzle has a heater. This feature prevents deposition of the carbon fiber on the inner wall of the nozzle compared with the nozzle having no heater.

Accordingly, Applicants submit that none of the references, whether considered alone or in combination, discloses or suggests the present claimed invention nor renders it unpatentable. Accordingly, it is respectfully requested that the claims be allowed and that the case be passed to issue.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Peter Saxon", written over a horizontal line.

Peter Saxon
Attorney for Applicants
Registration No. 24,947

FITZPATRICK, CELLA, HARPER & SCINTO
30 Rockefeller Plaza
New York, New York 10112-3801
Facsimile: (212) 218-2200
NY_538485v1

(b) Amendments to the Drawings

Please add a “PRIOR ART” legend to Fig. 2. A replacement drawing is enclosed labelled “Replacement Sheet” having the “PRIOR ART” legend.